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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,016	09/04/2003	Po-Liang Chiang	JCLA11302	9030
7590		10/18/2004	EXAMINER	
J.C. Patents, Inc.		KOVAL, MELISSA J		
Suite 250				
4 Venture		ART UNIT		
Irvine, CA 92618		2851		
		PAPER NUMBER		

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/657,016	Applicant(s) CHIANG ET AL.	
	Examiner Melissa J Koval	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 5-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the angular relationship, i.e. "a range of greater than  $-45^{\circ}$  and less than  $0^{\circ}$  as well greater than  $0^{\circ}$  and less than  $45^{\circ}$ " described with respect to claims 2, 7, and 13 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities: On page 8, line 15, - - field lens - - is incorrectly spelled "fled lens".

Appropriate correction is required.

### ***Claim Objections***

Claims 1, 2, 7, 10, 11 and 13 are objected to because of the following informalities:

In claim 1, line 9, applicant may want to change the phrase "reflected to reflective displaying device" to --reflected to a reflective displaying device --.

In claim 2, the reference to a negative angle and the use of the term "inclusive" is contradictory. It is not clear from the specification whether "inclusive" is intended to include the range between  $-45^{\circ}$  through  $+45^{\circ}$ , or some other range or angular relationship. Also the phraseology "less than  $0^{\circ}$  as well greater than  $0^{\circ}$ " is grammatically incorrect. Claims 7 and 13 are objected to for the same reasons.

In claim 10, line 13, applicant may be incorrectly using the phrase "lens sets" for which there is insufficient antecedent basis. Applicant seems to be referring back to "plate sets" in line 12 of claim 10.

In claim 11, line 1, - -plate - - is incorrectly spelled "plat".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Peterson et al. ('105 B1).

Refer to Figure 5 of Peterson et al. ("105 B1), for example.

Claim 1 sets forth: "An off-axis image projection system, comprising (See column 5, line 24.):

an illuminating source, emitting an illuminating beam (light source 32);

a reflective displaying device, for modulating the illuminating beam to form a reflected image-formation beam (See MDD 122. Also see column 5, lines 30 through 36.);

a projecting lens set, wherein the reflected image-formation beam is directed to the projecting lens set along a light path (projection lens 110); and

at least one first plate, implemented on the light path between the projecting lens set and the reflective displaying device (patterned-silvered mirror 126), wherein the illuminating beam from the illumination source enters the first plate and is reflected to reflective displaying device by a non-zero incident angle (See column 5, line 26.), and

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then the reflected image-formation beam travels through the first plate and enters the projecting lens set (Again see column 5, lines 30 through 36.)."

Claim 2 sets forth: "The off-axis image projection system of claim 1, wherein an included angle between the first plate and the light path is in a range of greater than  $-45^{\circ}$  and less than  $0^{\circ}$  as well greater than  $0^{\circ}$  and less than  $45^{\circ}$ ." Again refer to Figure 5. Furthermore, refer to the word "oblique" in column 5, line 26, of Peterson et al. ('105 B1). "Merriam-Webster's Collegiate Dictionary, Tenth Edition" gives several definitions for the word "oblique" including the following: "at a 45 degree angle". Therefore, the limitations of claim 2 are met as far as the terms and limitations of the claim can be understood.

Claim 3 sets forth: "The off-axis image projection system of claim 1, further comprising a field lens, disposed adjacent to the reflective displaying device, wherein the illuminating beam is incident to the reflective displaying device through the field lens, and the reflected image-formation beam travels out through the field lens (field lens 106)."

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson et al. ('105 B1) in view of Bone et al. ('931).

Claim 4 sets forth: "The off-axis image projection system of claim 1, further comprising:

a polarizing plate, implemented between the illuminating source and the reflective displaying device, for polarizing the illuminating beam; and

an analyzer, implemented between the first plate and the projecting lens set, for analyzing the reflected image-formation beam."

Peterson et al. ('105 B1) show all of the elements of claim 4 except for both a polarizing plate and an analyzer disposed as described in claim 4.

Refer to Figure 3, for example, of Bone et al. ('931). Bone et al. teach an off-axis projection system having a polarizer 304 disposed between illumination source 302 and reflective LCD 308, and an analyzer 310 disposed between reflective LCD 308 and projection lens 314. In column 7, lines 35 through 41, of Bone et al. ('931) wherein it is taught that the particular embodiments, as shown in '931, allow for the substitution of deformable mirror devices in place of a reflective LCD. The system of Bone et al. does not require an "at least one first plate" as set forth in claim 1, from which claim 4 depends.

For the embodiments described above, the off-axis systems of both Peterson et al. ('105 B1) and Bone et al. ('931) make use of a single modulation device, and are analogous systems. Column 6, lines 12 through 15, of '105 B1 allow for variations on the color modulators employed in the embodiments taught therein. It is an object of the

inventions of both '105 B1 and '931 to achieve off-axis image projection systems having increased brightness and improved image quality. See column 1, lines 40 through 48, of Peterson et al. ('105 B1), and column 1, lines 25 through 28, of Bone et al. ('931).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to add a polarizer 304 and an analyzer 310, as shown by Bone et al. ('931) to the system shown by Peterson et al. ('105 B1), thus meeting the limitations of claim 4. The motivation for one having ordinary skill in the art to make use of such well-known devices would be to direct the light along its optical path to further prevent lost light, thus improving brightness, resolution, and overall image-quality of the system.

#### ***Allowable Subject Matter***

Claims 5 through 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 7 is also objected to for minor informalities above.

Claims 10 through 15 would be allowable if rewritten or amended to overcome the objections to the claims set forth above.

The following is an examiner's statement of reasons for allowance:

The prior art of record neither shows nor suggests an off-axis projection system having all of the elements of claim 5 in combination, and particularly:



“a plurality of first plates, respectively implemented on the light paths between the projecting lens set and the reflective displaying devices, wherein the color illuminating beams split by the color splitter are respectively incident to the related first plates, and then are reflected by the first plates to the related reflective displaying devices by a non-zero incident angle, and the color illuminating beams separately travel through the related first plates and reach to the color combining device.”

The prior art of record neither shows nor suggests an off-axis projection system having all of the elements of claim 10 in combination, and particularly:

“a plurality of plate sets, respectively implemented between the projecting lens set and the reflective displaying devices, wherein the lens sets respectively reflect the color illuminating beams to the reflective displaying devices by a non-zero incident angle.”

The examiner reiterates that “lens sets” should be changed to - - plate sets - -.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Manabe U.S. Patent 5,555,041 teaches a projection apparatus.

Lewis et al. U.S. Patent 6,688,748 B2 teaches a system and method for using off-axis illumination in a reflective projection system.

"Merriam-Webster's Collegiate Dictionary, Tenth Edition," copyright 2001, page 800, gives definitions for the word "oblique".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJK



Handwritten signature of Melissa J Koval. The signature is written in cursive and includes the name 'Melissa J Koval'.